

I. SITE PREPARATION

Areas designated for borrow areas, embankment, and structural works shall be cleared, grubbed and stripped of topsoil. All trees, vegetation, roots and other objectionable material shall be removed. Channel banks and sharp breaks shall be sloped to no steeper than 1:1.

Areas to be covered by the pond or reservoir will be cleared of all trees, brush, logs, fences, rubbish and other objectionable material unless otherwise designated on the plans. Trees, brush and stumps shall be cut approximately level with the ground surface.

All cleared and grubbed material shall be disposed of outside and below the limits of the dam and reservoir as directed by the owner or his representative. When specified, a sufficient quantity of topsoil will be stockpiled in a suitable location for use on the embankment and other designated areas.

II. EARTH FILL

The fill material shall be taken from approved designated borrow area or areas. It shall be free of roots. stumps, wood, rubbish, oversize stones, frozen or other objectionable materials. The embankment shall be constructed to an elevation which provides for anticipated settlement to the design elevation. The fill height all along the length of the embankment shall be increased above the design elevation (including freeboard) as shown on the plans.

Placement

Areas on which fill to be placed shall be scarified prior to placement of fill. Fill materials shall be placed in 8-inch maximum thickness (before compaction) layers which are to be continuous over the entire length of the fill. The most porous borrow material shall be placed in the downstream portions of the embankment.

Compaction

The movement of the hauling and spreading equipment over the fill shall be controlled so that the entire surface of each lift shall be traversed by not less than one tread track of the equipment or compaction shall be achieved by a minimum of four complete passes of a sheepsfoot. rubber tired or vibratory roller. Fill material shall contain sufficient moisture such that the required degree of compaction can be obtained with the equipment used.

Where a minimum required density is specified, each layer of fill shall be compacted as necessary to obtain that density and is to be certified by the Engineer.

Cutoff Trench

Where specified, a cutoff trench shall be excavated along or parallel to the centerline of the embankment as shown on the plans. The bottom width of the trench shall be as shown on the drawings, with the minimum width being four feet. The depth shall be at least four feet or as shown on the plans. The side slopes of the trench shall be 1 to 1 or flatter. The backfill material for the cutoff trench shall be ML, CL, CH, OR MH TYPE SOIL and shall be compacted with equipment or rollers to assure maximum density and minimum permeability.

III. STRUCTURAL BACKFILL

Backfill material shall be of the type and quality conforming to that specified for the adjoining fill material. The fill shall be placed in horizontal layers not to exceed four inches in thickness and compacted by hand tampers or other compaction equipment. The material needs to fill the backfilling operation shall driven equipment be allowed to operate closer than four feet, measured horizontally, to any part of a structure. Under no circumstances shall equipment be driven over any part of a concrete structure or pipe unless there is a compacted fill of twenty-four inches or greater over the structure or

IV. PIPE CONDUITS

All pipes shall be circular in cross section.

A. Corrugated Metal Pipe

1. Materials - (Steel Pipe) - This pipe and its appurtenances shall be galvanized and fully bit-uminous coated and shall conform to the requirements of AASHTO Specifications M-190 Type A with watertight coupling bands. Any bituminous coating damaged or otherwise removed shall be replaced with cold applied bituminous coating compound.

Steel pipes with polymeric coatings shall have a minimum coating thickness of 0.01 inch (10 mil) on both sides of the pipe. The following coatings are commercially available: Nexon, Plasti-Cote, Blac-Klad, and Beth-Cu-Loy. Coated corrugated steel pipe shall meet the requirements of AASHTO M-245 and M-246.

Materials - (Aluminized Steel Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-274-791 with watertight coupling bands or flanges.

Materials - (Aluminum Pipe) - This pipe and its appurtenances shall conform to the requirements of AASHTO Specification M-196 or M-211 with watertight coupling bands or flanges. Coupling bands, anti-seep collars, end sections, etc. must be composed of the same material as the pipe. Metals must be insulated from dissimilar materials with use of rubber or plastic insulating materials at least 24 mils in thickness. Aluminum surfaces that are to be in contact with concrete shall be painted with one coat of zinc chromate primer. Hot dip galvanized bolts may be used for connections. The pH of the surrounding soils shall be less than 9 and greater than 4.

- 2. Connections All connections with pipes must be completely watertight. The drain pipe or barrel connection to the riser shall be welded all around when the pipe and riser are metal. Watertight coupling bands or flanges shall be used at all joints. Anti-seep collars shall be connected to the pipe in such a manner as to the completely watertight. Dimple bands are not considered to be watertight.
- Bedding The pipe shall be firmly and uniformly bedded throughout its entire length. Where rock or soft, spongy or other unstable soil is encountered. all such material shall be removed and replaced with suitable earth compacted to provide adequate support.
- 4. Laying pipe The pipe shall be placed with inside circumferential laps pointing downstream and with the longitudinal laps at the sides.
- 5. Backfilling shall conform to structural backfill as shown above.
- 6. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.

Reinforced Concrete Pipe

- Materials Reinforced concrete pipe shall have a rubber gasket joint and shall equal or exceed ASTM Specification C-361. An approved equivalent is AWWA Specification C-301.
- 2. Bedding All reinforced conrete pipe conduits shall be laid in a concrete bedding for their entire length. This bedding shall consist of high slump concrete placed under the pipe and up the sides of the pipe at least 10% of its outside diameter with a minimum thickness of 3", or as shown on the drawings.
- Laying pipe Bell and spigot pipe shall be placed with the bell end upstream. Joints shall be made in accordance with recommendations of the manufacturer of the material. After the joints are sealed for the entire line, the bedding shall be placed so that all spaces under the pipe are filled. Care shall be exercised to prevent any deviation from the original line and grade of the
- 4. Backfilling shall conform to structural backfill as shown above.
- 5. Other details (anti-seep collars, valves, etc.) shall be as shown on the drawings.
- C. For pipes of other materials, specific specifications shall be shown on the drawings.

V. CONCRETE

l. Materials

- a. Cement Normal Portland cement shall conform to the latest ASTM Specification C-150.
- b. Water The water used in concrete shall be clean, free from oil, acid, alkali, scales, organic matter or other objectionable substances.
- c. Sand The sand used in concrete shall be clean, hard, strong and durable, and shall be well graded with 100 percent passing a one-quarter inch sieve. Limestone sand shall not be used.
- d. Coarse Aggregate The coarse aggregate shall be clean, hard, strong and durable, and free from clay or dirt. It shall be well graded with a maximum size of one and one-half (1-4) inches.
- e. Reinforcing Steel The reinforcing steel shall be deformed bars of intermediate grade billet steel conforming to ASTM Specification A-615.
- 2. Design Mix The concrete shall be mixed in the following proportions, measured by weight. The water-cement ratio shall be 5-1 to 6 U.S. Gallons of water per 94 pound bag of cement. The proportion of materials for the trial mix shall be $1:2:3-\frac{1}{2}$. The combination of aggregates may be adjusted to produce a plastic and workable mix that will not produce harshness in placing or honeycombing in the structure.
- 3. Mixing The concrete ingredients shall be mixed in batch mixers until the mixture is homogeneous and of uniform consistency. The mixing of each batch shall continue for not less than one and one-half minutes after all the ingredients, except the full amount of water, are in the mixer. The minimum mixing time is predicted on proper control of the speed of rotation of the mixer and of the introduction of the materials, including water, into the mixer. Water shall be added prior to, during, and following the mixer-charging operations. Excessive overmixing requiring the addition of water to preserve the required concrete consistency shall not be permitted. Truck mixing will be allowed provided that the use of this method shall cause no violation of any applicable provisions of the specifications given here.
- 4. Forms The forms shall have sufficient strength and rigidity to hold the concrete and to withstand the necessary pressure, tamping, and vibration without deflection from the prescribed lines. They shall be mortar-tight and constructed so that they can be removed without hammoring or prying against the concrete.

The inside of forms shall be oiled with a nonstaining mineral oil or thoroughly wetted before concrete is placed.

Forms may be removed 24 hours after the placement of concrete. All wire ties and other devices used shall be recessed from the surface of the concrete.

- 5. Reinforcing Steel All reinforcing material shall be free of dirt, rust, scale, oil, paint or any other coatings. The sizel shall be accurately placed and securely tied and blocked into position so that no movement of the steel will occur during placement of concrete.
- 6. Consolidating Concrete shall be consolidated with internal type mechanical vibrators. Vibration shall be suplemented by spading and hand tamping as necessary to insure smooth and dense concrete along form surfaces, in corners, and around embedded items.
- 7. Finishing Defective concrete, honeycombed areas, voids left by the removal of tie rods, ridges on all concrete surfaces permanently exposed to view or exposed to water on the finished structure. shall be repaired immediately after the removal of forms. All voids shall be reamed and completely filled with dry-patching mortar.
- 8. Protection and Curing Exposed surfaces of concrete shall be protected from the direct rays of the sun for at least the first three (3) days. All concrete shall be kept continuously moist for at least ten (10) days after being placed. Moisture may be applied by apraying or aprinkling as necessary to prevent the concrete from drying. Concrete shall not be exposed to freezing during the curing period. Curing compounds may also be
- 9. Placing Temperature Concrete may not be placed at temperatures below 37°F with the temperature falling, or 34° with the temperature rising.

VI. STABILIZATION

All borrow areas shall be graded to provide proper drainage and left in a sightly condition. All exposed surfaces of the embankment, spillway, spoil and borrow areas, and berms shall be stabilized by seeding, liming, fertilizing and mulching (if required) in accordance with the vegetative treatment specifi- A cations or as shown on the accompanying drawings.

VII. EROSION AND SEDIMENT CONTROL

CREST ELEV. 250.5 -

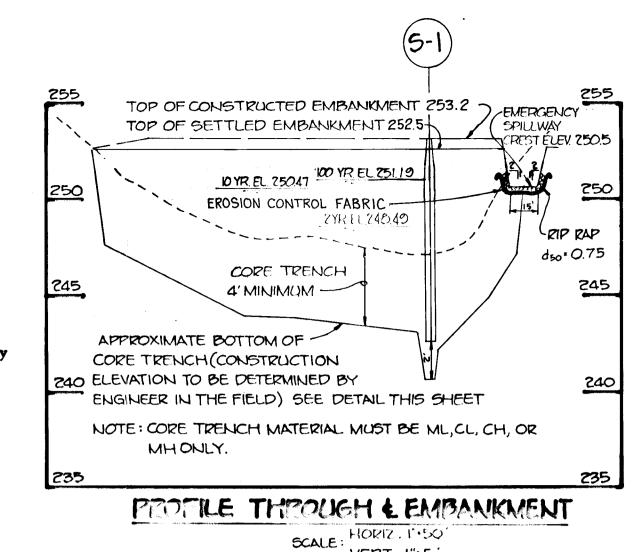
Construction operations will be carried out in such a manner that erosion will be controlled and water and air pollution minimized. State and local laws concerning pollution abatement will be followed. Construction plans shall detail erosion and sediment control measures to be employed during the construction process.

DOYR ELEV. ZSI. 19

RIP RAP d 50 • 0.75'

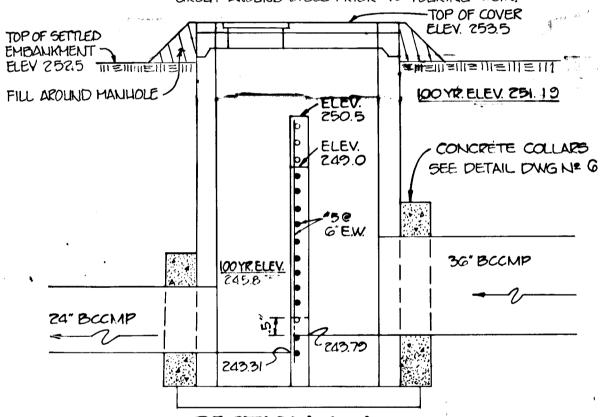
DEPTH : 0.75'

2YR ELEV. 248.49



MANHOLE STEPS -36" BCCMP 14 Ga. -24" BCCMP 14 Ga.

PLAN NOTE: CARRY REINFORCING STEEL INTO WALLS & BASE AND GROLIT AROUND STEEL PRIOR TO POLIRING WEIR. ELEV. 253.5



FILL AROUND

250.5

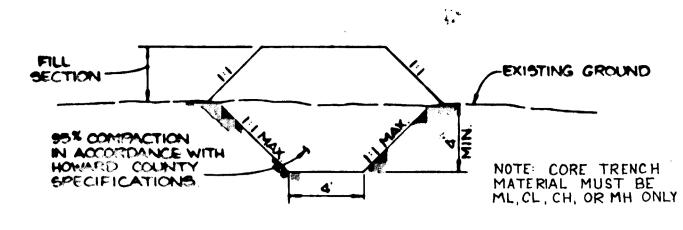
NO DATE

MANHOLE.

SECTION A-A SCALE: 1".3" TOP OF CONSTRUCTED LIMENANIKAENT 253.2 JOP OF COVER TOP OF SETTLED (ELEV. 253.5 EMBANKMENT TOP OF SETTLED /ELEV. 252.5 EMEANIKMENT 757.5 -RIP RAP SLOPE PROTECTION 100 YR.EL. 251.19 SEE DETAIL DWG. Nº 6 11 = 11 = 11 = 11 = 10 YR.EL. 250.42 2 YR. ELEV. 748.49 EX. GROUND @ 4 PIPE - CONCRETE COLLARS SEE DETAIL DWG NEG PHREACTIC -206 LINE METAL END SECTION WITH TRASH RACK 246 SEE DETAIL DWG. Nº 6 RIP RAP OUTLET PROTECTION SEE DETAIL SHEET No 2~ 244.0 21379 WEIR ELEVATION 26" METAL END SECTION 1243.0 CORE TRENCH -24 BOCCMP 14 Ga 36" BCCMP 14 Ga. @ 1.00% Vz . 2.6 fps Qz . 1.39 cs Q10 . 7.14 cf. Vz . 2.5 fps V6 4.0 fr 0,0 · 7.14 cfs O... · 18.55cfs ` 24°METAL Vu . 3.9 Fm V100 4.5 fps END SECTION a... 18.55 cfs

V100 - 5.0 fps

5 (A) E HORIZ. 1'-20', VERT. 1"-2"



TRENCH SECTION NO SCALE

BY THE ENGINEER:

"I CERTIFY THAT THIS PLAN FOR POND CONSTRUCTION, EROSION AND SEDIMENT CONTROL REPRESENTS A PRACTICAL AND WORKABLE PLAN BASED ON MY PERSONAL KNOWLEDGE OF THE SITE CONDITIONS. THIS PLAN WAS PREPARED IN ACCORDANCE WITH THE REQUIREMENTS OF THE HOWARD SOIL CONSERVATION DIS-TRICT. I HAVE NOTIFIED THE DEVELOPER THAT HE MUST PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION."

Sims K now ENGINEER! JAMES K TRACY

4.24.89 DATE

BY THE DEVELOPER:

"I CERTIFY THAT ALL DEVELOPMENT AND/OR CONSTRUCTION WILL BE DONE ACCORDING TO THESE PLANS, AND THAT ANY RESPONSIBLE PERSONNEL INVOLVED IN THE CONSTRUCTION PROJECT WILL HAVE A CER-TIFICATE OF ATTENDANCE AT A DEPARTMENT OF NATURAL RESOURCES APPROVED TRAINING PROGRAM FOR THE CONTROL OF SEDIMENT AND EROSION BEFORE BEGINNING THE PROJECT. I WILL PROVIDE THE HOWARD SOIL CONSERVATION DISTRICT WITH AN "AS-BUILT" PLAN OF THE POND WITHIN 30 DAYS OF COMPLETION. I ALSO AUTHORIZE PERIODIC ON-SITE INSPECTION BY THE HOWARD SOIL CONSERVATION DISTRICT.

DEVELOPEN: JOHN BRANDENBURG COLUMBIA HOUSING CORPORATION

THESE PLANS HAVE BEEN REVIEWED FOR THE HOWARD SOIL CONSERVATION DISTRICT AND MEET THE TECHNICAL DEQUIREMENTS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL.

Jan Mel_VS L CONSERVATION SERVICE

THESE PLANS FOR SMALL POND CONSTRUCTION, SOIL EROSION AND SEDIMENT CONTROL MEET THE PURREMENTS OF THE HOWARD SOIL CONSERVATION DISTRICT.

APPROVED: HOWARD COUNTY DEPT. OF PLANNING AND ZONING

basch J. 2. Carel. 8/22/09 CHIEF, DIVISION OF COMMUNITY PLANNING AND LAND DEVELOPMEN APPROVED: HOWARD COUNTY DEPARTMENT OF PUBLIC WORKS

8/17/89 8.51.84

TRACY, SCHULTE & ASSOCIATES INC.

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HARMONY LANE HOUSING

SECTION I

LOCATION TAX MAP Nº 47 . PARCEL Nº 821

COUNTY COMMISSIONERS OF HOWARD COUNTY THE COURTHOUSE ELLICOTT CITY, MARYLAND 21043 DEVELOPER

COLUMBIA HOUSING CORP. P.O. BOX 842. COLUMBIA, MARYLAND 21044

DRN J.L.D.

HOWARD COUNTY, MARYLAND TITLE STORMWATER MANAGEMENT SPECIFICATIONS AND DETAILS

5-89-53 WP-89-75 F-89-223 MAY 16, 1989 PROJECT NO 0150 AUGUST 7,1989 SCALE AS SHOWN

DRAWING 5 OF 6

455

E-83-773

SIXTH ELECTION DISTRICT

